Department	Pharmacy

Course Name	Biopharmaceutics & Pharmacokinetics	**Course No.**	0201421
Prerequisite	(0201321) Pharmaceutics-3-	Credit Hours	3
Number & date of course plan approval		Brief Description	See form QF02/0409

Intended Learning Outcomes	At the end of this module, student will be able to: 1. Understand the compartmental modeling and its significance 2. Understand drug kinetics processes 3. Understand pharmacokinetics and biopharmaceutics of drugs after intravascular and extravascular routes of administration. 4. Understand drug clearance 5. Understand bioavailability and bioequivalence		
Course Topics	1. Pharmacokinetics of IV bolus 2. Pharmacokinetics of IV infusion 3. Pharmacokinetics of oral route 4. Multiple dosage regimen 5. Drug elimination and Clearance 6. Bioavailability & Bioequivalence 7. Nonlinear Pharmacokinetics		
Text Books	Applied Biopharmaceutics & Pharmacokinetics 6th edition, 2012, editor Leon Shargel		
References	1.Pharmacokinetics, Milo Gibaldi 2.Clinical pharmacokinetics, concepts and applications, Rowland Tozer 3. http://www.boomer.org/c/p1		
☐ **Grade Determination**	1st Exam = 25% 2nd Exam = 25% Final Exam = 50%	☐ Practical Course Grade Determination	Course Work = 50% (Reports, Term Papers, Quizes) Final Exam = 50%

Course Outline

Week	Hours	Subjects	Chapters in Textbook	Notes
1	1 1 1	-Pharmacokinetics Introduction & Concepts -Plasma Level-Time curve, Pharmacokinetic models -Review of rates and orders of reactions	1 2	
2	1 1 1	-One compartment open model(IV bolus): calculation of volume of distribution -calculation of Elimination half-life & AUC -calculation of k from plasma data	3	
3	1 1 1	- calculation of k from urinary excretion data - Learning questions - Two compartment open model (IV bolus)	3 4	
4	1 1 1	-Method of residuals -Apparent Volumes of distribution -Learning questions	4	
5	1 1 1	Intravenous Infusion: -one-compartment model drugs - time needed to reach Css -loading dose plus IV infusion	5	
6	1 1 1	-calculating elimination half-life & K -estimation of drug clearance and Vd from infusion data - Learning Questions	5	
7	1 1 1	Pharmacokinetics of oral absorption: -zero order absorption models - first order absorption models -calculation of plasma concentration, calculation of t max	7	
8	1 1 1	-determination of absorption rate constant by method of residuals -Lag time -significance of absorption rate constant -determination of excretion rate constant	7	
9	1 1 1	-Learning Questions in single oral dose Multiple dosage regimens: -drug accumulation & superposition principle -Repetitive intravenous injections	8	
10	1 1 1	- Calculation of Missed dose - Intermittent IV infusion -Multiple oral dose regimen	8	
11	1 1 1	-Loading dose plus maintenance dose -Determination of bioavailability in multiple dose regimen -Dosage regimen schedules	8	

12	1 1 1	-Learning Questions in multiple dosage regimens -Drug Elimination :metabolism &excretion -Total body clearance, clearance models	6	
13	1 1 1	-Physiological processes of kidneys -1st order elimination, fraction of drug excreted and renal clearance -Learning Questions	6	
14	1 1 1	-hepatic elimination of drugs, pathways for drug metabolism -1st order elimination, fraction of drug metabolized, hepatic clearance -1st pass effect,liver extraction ratio, intrinsic clearance	11	
15	1 1 1	-Bioavailability & Bioequivalence, definitions -Relative & Absolute availability -Methods for assessing bioavailability	15	
16	1 1 1	-Serum creatinine concentration & creatinine clearance -Final exam -Final exam	21	

Approved by Dept. Chair		Date of Approval	

Extra Information: (Updated every semester and filled by course instructor)

Course Instructor	Dr. Suhair Hikmat & Dr. AbdelQader AL Bawab
Office No.	
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